

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P16869PC/MH	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE2003/002074	International filing date (<i>day/month/year</i>) 23/12/2003	Priority date (<i>day/month/year</i>)
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant Telefonaktiebolaget L M Ericsson (publ) et al		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of _____ sheets, as follows:</p> <div style="margin-left: 40px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. </div> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							

Date of submission of the demand 26-04-2005	Date of completion of this report 06-02-2006
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Nabil Sebaa /LR Telephone No. +46 8 782 25 00

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Cover sheet

INTERNATIONAL PATENT CLASSIFICATION (IPC):

H04L 12/56 (2006.01)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/002074

Box No. 1 **Basis of the report**1. * With regard to the **language**, this report is based on:

the international application in the language in which it was filed

a translation of the international application into _____,
which is the language of a translation furnished for the purposes of:

international search (Rules 12.3(a) and 23.1(b))



publication of the international application (Rule 12.4(a))



international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished



the description:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____



the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____



the drawings:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____



a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

the description, pages _____



the claims, Nos. _____



the drawings, sheets/figs _____

the sequence listing (*specify*): _____any table(s) related to the sequence listing (*specify*): _____4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages _____



the claims, Nos. _____



the drawings, sheets/figs _____

the sequence listing (*specify*): _____any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/002074

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>see below</u>	YES
	Claims	<u>see below</u>	NO
Inventive step (IS)	Claims	<u>see below</u>	YES
	Claims	<u>see below</u>	NO
Industrial applicability (IA)	Claims	<u>see below</u>	YES
	Claims	<u>see below</u>	NO

2. Citations and explanations (Rule 70.7)

Statement:

Novelty (N)

Claims (YES) : 2-6, 9-10, 12-14, 16, 18-20, 23-24, 26-30, 32-36, 39-40, 42-45

Claims (NO) : 1, 7-8, 11, 15, 17, 21-22, 25, 31, 37-38, 41, 46-48

Inventive Step (IS)

Claims (YES) : -

Claims (NO) : 1-48

Industrial applicability (IA)

Claims (YES) : 1-48

Claims (NO) : -

The invention relates to a routing system, method and apparatus for an ad hoc based network in a mobile environment using a predictive routing model. The problem to be solved by the invention concerns variations in radio conditions in a mobile environment caused by fading, propagation-loss and shadowing, which leads to changes of the signal quality especially when they change faster than the update frequency of the routing table or routing path changes.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

The object of the invention is to provide a predictive routing model using link status information between wireless nodes and distribute this information to all nodes in the system.

Documents cited in the International Search Report:

D1: US 20020071395 A1

D2: WO 02078229 A1

D3: WO 03071751 A1

D4: US 2003204587 A1

D5: US 2003179742 A1

D6: WO 02084956 A1

Document D1 describes a routing system, method, and apparatus for an ad hoc based network in a mobile environment. According to D1 the system comprises means for acquiring quality information indicating link status between nodes; means for using that information in a route determination process using a predictive model wherein, the information about a time varying of the link status and a predictive model is used to determine a routing of the packets (see abstract, [0068], [0016]-[0020], claims 1-2, 5, and 33 in D1). A computer program and a routing protocol are also implicitly described in D1.

Consequently, the subject matter of claims 1, 7-8, 11, 15, 17, 21-22, 25, 31, 37-38, 41, 46-48 is previously known and therefore lacks novelty.

The claims 2-3, 9-10, 12-14, 23-24, 26-30, 32-33, 39-40, 42-45 are considered to involve particular detail executions obvious to a person skilled in the art. Therefore, the invention according to these claims is not considered to involve an inventive step.

The invention according to claims 4-6, 16, 18-20, 34-36 differs from D1 in that a reactive ad hoc routing, a proactive ad hoc routing or a combination of those protocols could be used. In D1, a predictive model is described based on the status information of the nodes and the quality of the signals. According to D2 (see [0032], [00262] in D2), a proactive and a reactive model can be used and that they are broadly known in the art. Consequently, it is considered obvious for a person skilled in the art to combine these

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

routing models with the predictive model used in D1 especially as they are already known in the art.

Therefore, the invention according to claims 4-6, 16, 18-20, 34-36 is considered to lack an inventive step.

The invention according to claims 1-48 is considered industrially applicable.

Additional documents D3-D6 cited in the search report are considered to represent the general state of the art and the invention according to claims 1-48 is not disclosed by these documents D3-D6.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/002074

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO2004030258A2	8/04/2004	11/09/2003	24/09/2002

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)
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